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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,462	08/21/2003	Xiaolan Ai	TIMK 7859C1	8013

1688 7590 09/16/2005

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EXAMINER
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HO, HA DINH

ART UNIT	PAPER NUMBER
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3681

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/645,462

Applicant(s)

AI ET AL.

Examiner

Ha D. Ho

Art Unit

3681

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-16, 32-34 and 36-38 is/are allowed.
- 6) ☒ Claim(s) 17-31 and 35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/14/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This is the first Office Action on the merits of Application No. 10/645,462 filed on 08/21/05. Claims 1-38 are currently pending.

#### ***Election/Restrictions***

2. Applicant's election with traverse of Species 1 in the reply filed on 6/30/05 is acknowledged.
3. Claims 1, 20, 28 and 32 are generic and allowable. Accordingly, the restriction requirement as to the encompassed species is hereby withdrawn and claims 6, 7, 30, 31 and 35-38, directed to the non-elected species, are no longer withdrawn from consideration since all of the claims to this species depend from or otherwise include each of the limitations of an allowed generic claim.
4. In view of the above noted withdrawal of the restriction requirement as to the linked species, applicant(s) are advised that if any claim(s) depending from or including all the limitations of the allowable generic linking claim(s) be presented in a continuation or divisional application, such claims may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

#### ***Drawings***

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of the planet rollers located in the

Art Unit: 3681

cavities of the spindle (see claim 23) must be shown or the feature(s) canceled from the claim(s).

No new matter should be entered.

6. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

7. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

8. The abstract of the disclosure is objected to because of exceeding 150 words. Correction is required. See MPEP § 608.01(b).

9. The specification, on page 2, the first paragraph should be amended to show the current status of the parent application 09/853,534.

***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 17-31 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 17, line 6, the recitation of "said planet axles" lack antecedent basis.
- Claim 17, line 25, the recitation of "a first planet roller" constitutes a double inclusion since "first planet rollers" were previously recited in claim 17, line 19.
- Claim 17, lines 25-26, the recitation of "a second planet roller" constitutes a double inclusion since "second planet rollers" were previously recited in claim 17, line 22.
- Claim 19, line 2, the recitation of "first and second sun rollers" constitutes a double inclusion since "first and second sun rollers" were previously recited in claim 17, lines 9-10.

- Claim 20, line 24, the recitation of “a first planet roller” constitutes a double inclusion since “first planet rollers” were previously recited in claim 20, line 18.
- Claim 20, lines 24-25, the recitation of “a second planet roller” constitutes a double inclusion since “second planet rollers” were previously recited in claim 20, line 21.
- Claim 28, line 19, the recitation of “shaft” constitutes a double inclusion since “a center shaft” was previously recited in claim 28, line 6.
- Claim 35, lines 3-4, the recitation of “a plurality of recesses” constitutes a double inclusion since “a plurality of recesses” was previously recited in claim 34, lines 2-3.

*Claim Rejections - 35 USC § 102*

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 17, 18, 21, 22, 24 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Ai et al. (US 6,095,940).

(Claim 17)

Ai et al teach a hub assembly (see Fig. 1) comprising:

a carrier attached securely to a supporting structure (see col. 5, lines 33-35) and including planet axles (58, 64) extending generally axially and arranged around the axis X; said carrier including axle supporting members (54, 56) against which planet axles seat (where the axle ends are

Art Unit: 3681

seated) to substantially prevent said planet axles from moving radially inwardly relative to said axis X;

a center shaft (2) located within said carrier and carrying first and second sun rollers (12, 14) defining first and second inner raceways (22, 24) which are presented outwardly away from the axis and tapered downwardly away from each other so that the inner raceways are closest where they have their greatest diameters;

a hub (4) located around the axles of the carrier and having first and second outer raceways (36, 38) which taper downwardly away from each other so that the first

and second outer raceways are closest where they have their greatest diameters, the first outer raceway being presented toward the first inner raceway and the second outer raceway being presented toward the second inner raceway;

first planet rollers (6) located around the planet axles and between the first raceways, each first planet roller having a tapered side face where it contacts the first raceways and an end face generally at the large end of its tapered side face;

second planet rollers (8) located around the planet axles between the second raceways, each planet second roller having a tapered side face where it contacts the second raceways and an end face generally at the large end of its side face;

there being around each planet axle the first planet roller and the second planet roller, with the first and second planet rollers around each axle contacting each other at their end faces; the planet rollers being rotatable relative to the planet axles to transfer between the planet rollers and the planet axles loads that are directed radially or axially with respect to the axis whereby both the shaft and hub will rotate about the axis, with the shaft rotating at a velocity greater than the hub and

whereby inwardly directed radial loads are transferred from said hub to said carrier while bypassing said center shaft.

(Claim 18) bearings (62) located between the planet axles and the planet rollers.

(Claim 21) the hub (4) comprises first and second rings (26, 28) on which the first and second outer raceways are located, respectively.

(Claim 22) the carrier has a flange (54) at which the carrier is attached to the supporting structure and a spindle (60) projecting from the flange with the planet axles being on the spindle of the carrier.

(Claim 24) the planet axles have bearing seats (the surface of the axles), and the bearings have inner races which fit around the axle bearing seats and rolling elements (the needle bearing) which are located around the inner races and within the rollers, the inner races being against the axles at the bearing seat to transfer loads from the planet rollers to the axles.

(Claims 17 and 27) Ai et al show a hub assembly of Fig. 7 that is similar to the hub assembly of Fig. 1, wherein the planet rollers (122, 124) are bearings, the planet rollers including roller inner races (130) and roller outer races (126) and rolling elements (128) positioned between the roller inner and outer races.

### ***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ai et al. (US 6,095,940) in view of Nakamura (JP 6-94092).

Ai et al do not show the shaft (2) having a spindle including first and second sun rollers located around the spindle, with the first inner raceway being on the first sun roller and the second inner raceway being on the second sun roller.

Nakamura teaches a transmission that has a shaft having a spindle (1) including first and second sun rollers (3, 4) located around the spindle, with the first inner raceway being on the first sun roller and the second inner raceway being on the second sun roller.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the assembly of Ai et al such that the shaft (2) having a spindle including first and second sun rollers located around the spindle, with the first inner raceway being on the first sun roller and the second inner raceway being on the second sun roller as taught by Nakamura in order to reduce frictional resistance and noise (see abstract).

16. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ai et al. (US 6,095,940) in view of Myers (US 4,330,045).

Ai et al do not show a road wheel attached securely to the hub, and an electric motor interposed between the carrier of the hub assembly and the supporting structure; and wherein the shaft extends through the motor and is rotated by the motor.

Myers shows a wheel hub assembly including a road wheel (21) attached securely to the hub (18, 48), and an electric motor (31) interposed between the carrier (17, 47) of the hub assembly and

the supporting structure (12); and wherein the shaft (13) extends through the motor and is rotated by the motor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the assembly of Ai et al to have a road wheel attached securely to the hub, and an electric motor interposed between the carrier of the hub assembly and the supporting structure, and the shaft extending through the motor and rotated by the motor as taught by Myers in order to make use of the Ai et al hub assembly as a wheel hub assembly.

*Allowable Subject Matter*

17. Claims 1-16, 32-34 and 36-38 are allowed.
18. Claims 20 and 28-31 and 35 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

*Cited Prior Art*

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Jaquith'861, Sinclair et al.'554, Love et al.'590, Yato'763, and Takahashi'860 which each shows a hub assembly including roller planetary gear.

*Communication*

20. Submission of your response by facsimile transmission is encouraged. The fax phone numbers for the organization where this application or proceeding is assigned are **(571) 273-8300**. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post Office processing and delivery time as well as the PTO's mail room processing and delivery time. For a complete list of correspondence not

Art Unit: 3681

permitted by facsimile transmission, see M.P.E.P. 502.01. In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check should not be submitting by facsimile transmission separately from the check. Responses submitted by facsimile transmission should include a Certificate of Transmission (M.P.E.P. 512). The following is an example of the format the certification might take:

I hereby certify that this correspondence is being facsimile transmitted to  
the Patent and Trademark Office on \_\_\_\_\_

(Date)

Typed or printed name of person signing this certificate:

\_\_\_\_\_


(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and M.P.E.P. 502.02). Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ha D. Ho whose telephone number is **571-272-7091**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on **571-272-7095**.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HDH  
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September 14, 2005

  
**HAHO**  
**PRIMARY EXAMINER**  
Art Unit 3681

9/14/05